



(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 021 056 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

19.07.2000 Bulletin 2000/29

(51) Int. Cl.⁷: H04Q 7/36

(21) Application number: 00300034.6

(22) Date of filing: 06.01.2000

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE

Designated Extension States:

AL LT LV MK RO SI

(30) Priority: 11.01.1999 US 228266

(71) Applicant:

LCENT TECHNOLOGIES INC.
Murray Hill, New Jersey 07974-0636 (US)

(72) Inventors:

- Abramovici, Gabrielz Maria
Berkeley Heights, NJ 07922 (US)
- Chambers, Michael Dwayne
Plainfield, Illinois 60544 (US)
- Koo, Yuen-Yin L.
Morristown, NJ 07960 (US)
- Mizikovsky, Semyon B.
Morganville, NJ 07751 (US)

(74) Representative:

Breckley, Christopher Simon Thirkle et al.
Lucent Technologies Inc., 5 Mornington Road
Woodford Green, Essex IG8 0TU (GB)

(54) Signaling to support wireless service redirection

(57) A selective Global Service Redirection mechanism allows a service provider, for instance, to instruct only CDMA2000 (MOB_P_REV = 6) mobiles to access specific carrier that is deployed to support advanced services known as 3G services. In another embodiment, data-only CDMA2000 mobiles are instructed to access specific carrier that is optimized to support high speed data services. Additionally, data-only CDMA2000 mobiles may be instructed to access a specific carrier that is optimized to support high speed data services. Pre-CDMA2000 mobiles (MOB_P_REV <6) are redirected by a conventional *Global Service Redirection Message* to another carrier, while CDMA2000 mobiles (MOB_P_REV => 6) are instructed to ignore this redirection.

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DescriptionBackground of the Invention1. Field of the Invention

[0001] The present invention is related to communications; more particularly, the redirection of mobile station's communications.

2. Description of the Prior Art

[0002] With the Global Service Redirection mechanism currently defined in IS-95B (the telecommunications standard IS95B is hereby incorporated by reference), a base station can redirect mobile stations of the selected subscriber Access Control Overload class (ACCOLC) or classes to a specific CDMA carrier or the analog system. This mechanism can be used by service providers to control CDMA subscriber access to their system for some special situations, for example when deploying a new system and during potential system overload situations.

[0003] As more CDMA protocols are being developed, the current Global Service Redirection mechanism is insufficient to meet the need of those service providers who want to control global subscriber access effectively with some new attributes.

Summary of the Invention

[0004] The present invention provides, in addition to ACCOLC, the use two new attributes for Global Service Redirection, which are mobile station protocol revision (MOB_P_REV) and desired service type (specifically data, voice, and SMS, etc), without excluding other potential attributes.

[0005] Hence, Global Service Redirection mechanism becomes more selective, allowing service provider, for instance, to instruct only CDMA2000 (MOB_P_REV=6) mobiles to access specific carrier that is deployed to support advanced services known as 3G services. The Telecommunications Industry Association (TIA) CDMA 2000 (MOB_P_REV =6) standard is hereby incorporated by reference.

[0006] In another embodiment, data-only CDMA2000 mobiles are instructed to access specific carrier that is optimized to support high speed data services.

[0007] In yet another embodiment, pre-CDMA2000 mobiles (MOB_P_REV <6) are redirected by a conventional *Global Service Redirection Message* to another carrier, while CDMA2000 mobiles (MOB_P_REV => 6) are instructed to ignore this redirection.

[0008] In an embodiment used for a test deployment application, mobile stations of specific Access Overload Class (ACCOLC) corresponding to a particular revision level (MOB_P_REV) can be redirected to a

carrier that supports the test.

Brief Description of the Drawings

5 [0009]

FIG. 1 illustrates a base station and a mobile station; and

FIG. 2 is a table showing the procedures associated with GSRM and EGSRM messages.

Detailed Description of the Invention

[0010] This invention provides an easily implementable, flexible and backward compatible solution for the 3G capable base station to redirect mobile stations to a specific CDMA carrier or the analog system. FIG. 1 illustrates a base station and a mobile station.

[0011] The base station may redirect mobile stations with the following criteria:

7.1 ACCOLC, multiple ACCOLC classes can be selected.

Protocol Revision: a given protocol, a range of protocol revisions.

Service type: all services with an exception, or a specific service such as voice, data, or SMS, etc.

[0012] A new message - *Extended Global Service Redirection Message* (EGSRM) - is transmitted on the overhead message train by the 3G capable base station as needed. This new message will affect the 3G mobile stations only (i.e., mobile stations with protocol revision (MOB_P_REV) equal to or greater than 6).

[0013] The base station will indicate in the *System Parameter Message* (or the *Extended System Parameter Message* as the alternate option) whether or not this new overhead message (EGSRM) is to be sent. When EGSRM is sent, the 3G capable mobile stations will use this message instead of a *Global Service Redirection Message*, which might be sent as well. The 2G or less advanced mobile stations will use the *Global Service Redirection Message* as usual.

[0014] Using the protocol revision attribute, the infrastructure can indicate that it intends to serve only mobile stations of a specific protocol revision, or not to serve mobile stations in a specified range of protocol revisions.

[0015] With the service type attribute, the infrastructure can indicate that it intends to provide a specific type of service on a given CDMA carrier, or not to provide any particular type of service on a given CDMA carrier.

[0016] The following are the changes to the current CDMA2000 signaling to support this invention:

- Provide a new *Extended Global Service Direction Message* (EGSRM) to contain, in addition to the

information provided in the *Global Service Redirection Message* (GSRM) currently defined in the IS-95B, the following information:

- The protocol revision, or a range of protocol revisions, of which the mobile stations of the selected ACCOLC class/classes are to be redirected.
- Service type being redirected: all with an exception or a specific type of service (such as voice, data, SMS, or reserve type for future expansion)
- Provide a new indicator or bit (EXT_GLOBAL_REDIRECT) in the *System Parameter Message* to indicate whether or not the *Extended Global Service Redirection Message* is being sent.

[0017] The following rules or procedures are used to determine how GSRM and EGSRM messages are used by all mobile stations including the old and new:

- If both the GLOBAL_REDIRECT and EXT_GLOBAL_REDIRECT bits or indicators are set to '1' (or ACTIVE STATE),
- The mobile stations with MOB_P_REV equal to or greater than 6 will be instructed by the *Extended Global Redirection Message* (EGSRM).
- The mobile stations of selected ACCOLC with MOB_P_REV in the range (DIRECT_P_MIN to DIRECT_P_MAX inclusive) will be redirected by the EGSRM.
- The mobile stations with MOB_P_REV less than 6 will be instructed by the *Global Service Redirection Message* (GSRM).
- If GLOBAL_REDIRECT bit is set '1' and EXT_GLOBAL_REDIRECT is set to '0', all mobile stations will be redirected by the *Global Service Redirection Message* (GSRM).
- If EXT_GLOBAL_REDIRECT is set to '1' and GLOBAL_REDIRECT is set to '0', only mobile stations with MOB_P_REV equal to or greater than 6 will be redirected by the EGSRM.
- When both GLOBAL_REDIRECT and EXT_GLOBAL_REDIRECT are set to '0', there is no global service redirection.

[0018] FIG. 2 is a table summarizes the rules stated above.

Claims

1. A method for selectively redirecting a first type of

mobile telecommunications station and a second type mobile telecommunications station to seek communication services on a particular carrier signal, CHARACTERIZED BY the steps of:

providing a first and a second carrier signal; transmitting a first redirection message; transmitting a second redirection message, where the first redirect message only redirects the first type of mobile telecommunications station to a particular carrier signal.

2. The method of claim 1, further CHARACTERIZED BY the steps of:
 - transmitting a first indicator that signals that a first redirect message is being transmitted; and transmitting a second indicator that signals that a second redirect message is being transmitted.
3. The method of claim 2, CHARACTERIZED IN THAT the first indicator is active when the first redirect message is being transmitted to redirect the first type of mobile telecommunications station and the second indicator is active when the second redirect message is being transmitted to redirect the second type of mobile telecommunications station.
4. The method of claim 2, CHARACTERIZED IN THAT the first indicator is inactive and the second indicator is active when the second redirect message is being transmitted to redirect the first and second type of mobile telecommunications stations.
5. The method of claim 2, CHARACTERIZED IN THAT the first indicator is active when the first redirect message is being transmitted to redirect the first type of mobile telecommunications station and the second indicator is inactive so that the second type of mobile telecommunications station is not redirected.

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FIG. 1

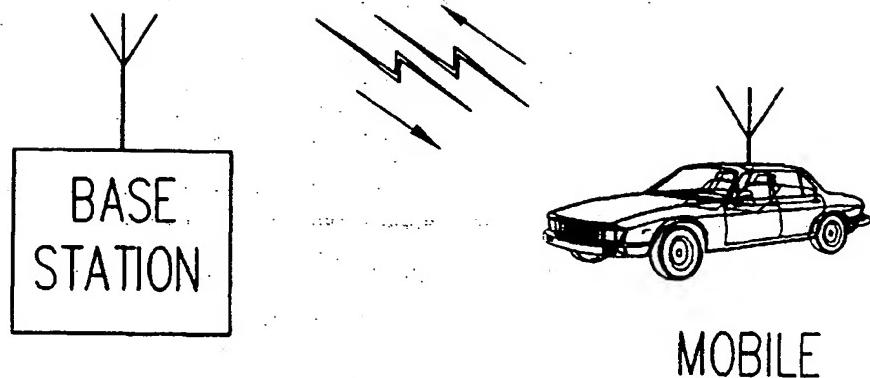


FIG. 2

GLOBAL_REDIRECT	EXT_GLOBAL_REDIRECT	PROCEDURES
1	1	CSRM USED FOR MOB_P_REV < 6 EGSRM USED FOR MOB_P_REV ≥ 6
1	0	CSRM USED FOR ALL MS
0	1	EGSRM USED FOR MOB_P_REV ≥ 6
0	0	NO REDIRECTION



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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 0034

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 94 13069 A (ERICSSON TELEFON AB L M) 9 June 1994 (1994-06-09)	1	H04Q7/36
Y	* abstract * * page 4, line 6 - line 21 * * page 18, line 18 - line 24 * * page 21, line 31 - page 22, line 33 * * figures 1,6 *	2-5	
X	WO 95 12936 A (ERICSSON TELEFON AB L M ;HENRY RAY (US)) 11 May 1995 (1995-05-11)	1	
Y	* abstract * * page 1, line 21 - line 28 * * page 5, line 12 - line 19 * * page 8, line 11 - line 17 *	2-5	
A	WO 98 59513 A (NOKIA MOBILE PHONES LTD ;LINTULAMPI RAINO (FI)) 30 December 1998 (1998-12-30) * page 1, line 30 - page 3, line 6 *	1-5	
A	EVERITT D: "TRAFFIC CAPACITY OF CELLULAR MOBILE COMMUNICATIONS SYSTEMS" COMPUTER NETWORKS AND ISDN SYSTEMS, NL, NORTH HOLLAND PUBLISHING. AMSTERDAM, vol. 20, no: 1 / 05, 1 December 1990 (1990-12-01), pages 447-454, XP000161302 ISSN: 0169-7552 * paragraphs '0001!, '03.2! *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H04Q
A	GB 2 173 377 A (INT STANDARD ELECTRIC CORP) 8 October 1986 (1986-10-08) * abstract * * page 1, line 64 - page 2, line 28 *	1	
		-/-	
The present search report has been drawn up for all claims			
Place of search EPO FORM 163/02 (PCOII)	Date of completion of the search MUNICH 6 April 2000	Examiner Rabe, M	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document	
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Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.)
E	DE 198 34 674 A (ERICSSON TELEFON AB L M) 3 February 2000 (2000-02-03) * abstract * * column 8, line 16 - column 19, line 16 * * figures 1-3 *	1	
TECHNICAL FIELDS SEARCHED (Int.Cl.)			
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
MUNICH	6 April 2000	Rabe, M	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 00 30 0034

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
 The members are as contained in the European Patent Office EDP file on
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06-04-2000

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9413069	A 09-06-1994	AU 670658	B	25-07-1996
		AU 5582694	A	22-06-1994
		BR 9305779	A	18-02-1997
		CA 2128105	A	09-06-1994
		CN 1090701	A	10-08-1994
		GB 2278256	A, B	23-11-1994
		HK 1006616	A	05-03-1999
		JP 7507190	T	03-08-1995
		MX 9307243	A	31-05-1994
		NZ 258268	A	28-05-1996
		SE 9402559	A	19-09-1994
		SG 43317	A	17-10-1997
		US 5749055	A	05-05-1998
WO 9512936	A 11-05-1995	US 5603081	A	11-02-1997
		AU 681730	B	04-09-1997
		AU 1048095	A	23-05-1995
		AU 680071	B	17-07-1997
		AU 1048395	A	23-05-1995
		AU 691850	B	28-05-1998
		AU 1087495	A	23-05-1995
		AU 685885	B	29-01-1998
		AU 1087695	A	23-05-1995
		AU 695892	B	27-08-1998
		AU 2079997	A	24-07-1997
		AU 2358897	A	14-08-1997
		AU 690924	B	07-05-1998
		AU 7757094	A	18-05-1995
		AU 7865898	A	15-10-1998
		AU 7865998	A	01-10-1998
		AU 697210	B	01-10-1998
		AU 8131394	A	23-05-1995
		AU 681721	B	04-09-1997
		AU 8131494	A	23-05-1995
		BR 9404316	A	04-07-1995
		BR 9405702	A	28-11-1995
		BR 9405703	A	28-11-1995
		BR 9405704	A	28-11-1995
		BR 9405705	A	28-11-1995
		BR 9405743	A	05-12-1995
		BR 9405927	A	05-12-1995
		CA 2134695	A	02-05-1995
		CA 2152942	A	11-05-1995
		CA 2152943	A	11-05-1995
		CA 2152944	A	11-05-1995
		CA 2152945	A	11-05-1995

10 FORM P048

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 30 0034

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

06-04-2000

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9512936 A		CA	2152946 A	11-05-1995
		CA	2152947 A	11-05-1995
		CN	1112345 A	22-11-1995
		CN	1117329 A	21-02-1996
		CN	1116888 A	14-02-1996
		CN	1117330 A	21-02-1996
		CN	1117331 A	21-02-1996
		CN	1124074 A	05-06-1996
		CN	1117332 A	21-02-1996
		EP	0652680 A	10-05-1995
		EP	0682829 A	22-11-1995
		EP	0679304 A	02-11-1995
		EP	0677222 A	18-10-1995
		EP	0681766 A	15-11-1995
		EP	0677223 A	18-10-1995
		EP	0677224 A	18-10-1995
		FI	953262 A	30-08-1995
		FI	953263 A	30-06-1995
WO 9859513 A	30-12-1998	FI	972722 A	25-12-1998
		AU	7656498 A	04-01-1999
GB 2173377 A	08-10-1986	NONE		
DE 19834674 A	03-02-2000	WO	0008884 A	17-02-2000